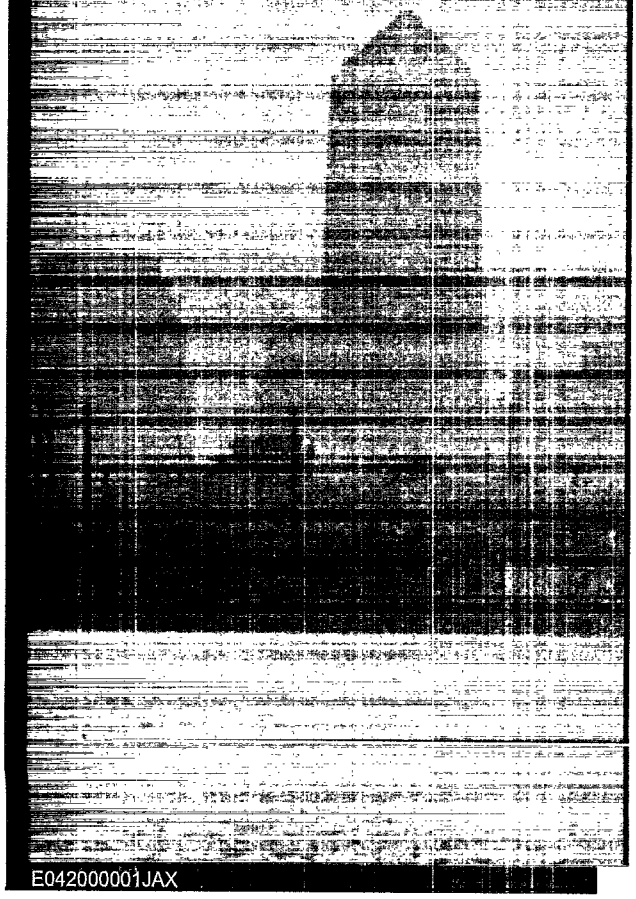
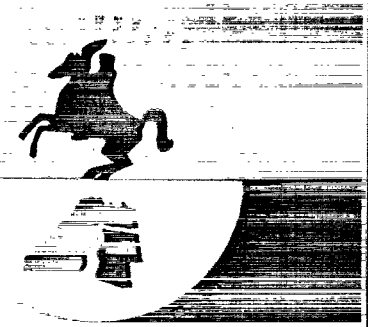
Work Plan:

Surface Water/Sediment Sampling Addendum: Revision No. 1

for the Remedial Investigation/Feasibility Study for Brown's Dump Site





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Contents

SECTION 1

Introduction

1.0 Introduction

1.1 Purpose

At the request of U.S. Environmental Protection Agency (EPA), CH2M HILL has prepared this Brown's Dump Site Surface Water/Sediment (SWSD) Sampling Plan separately from the Brown's Dump Site Work Plan. This SWSD Plan includes additions to Sections 10 through 12 of the Brown's Dump Site Work Plan, Revision No. 2, dated March 2000. Standard Operating Procedures are included in Appendix D and the QAPP is provided in Appendix F of the Brown's Dump Site Work Plan.

1.2 Report Organization

This SWSD plan includes the following sections and includes only narrative, tables, and figures that address surface water and sediment sampling:

Section 10 – Standardized Field Sampling and Laboratory Analysis Strategy
Section 11 – Background Sampling Plan
Section 12 – Brown's Dump Site Field Sampling Plan

For clarity, section numbering is consistent with the Brown's Dump Site Work Plan.

SECTION 10

Standardized Field Sampling and Laboratory Analysis Strategy

10.0 Standardized Field Sampling and Laboratory Analysis Strategy

10.1 Purpose

Sediment and surface water samples will be collected for laboratory analysis to characterize the conditions at the sites currently under investigation. General sampling and decontamination procedures will be conducted according to EPA Region IV protocols, as described in Appendix D of the Brown's Dump Site Work Plan. Sampling will be conducted as described in the subsections that follow.

10.3 Surface Water and Sediment

10.3.1 Surface Water and Sediment Sampling Strategy

A standardized sampling strategy will be used for surface water and sediment samples.

- Surface water samples will be taken in the water column at the designated sample location. Surface water samples at a given location will be collected prior to sediment sampling.
- Sediment samples from rivers or creeks will be collected using a stainless steel sediment sampling device such as an Eckman dredge or a ponar.
- The sediment samples will be collected from the sediment surface to a depth of 6 inches.
- Field judgement will be used to locate sediment samples in areas more representative of sediment deposition.

10.3.2 Laboratory Analysis Strategy for Surface Water and Sediment

The standardized laboratory analysis strategy for surface water and sediment is described below:

- All sediment samples will be analyzed for the TCL (except VOCs)/TAL; 20 percent of collected samples will be analyzed for VOCs and for dioxins and furans.
- All surface water samples per site will be analyzed for TCL (except VOCs)/TAL; 20 percent of the collected samples will be analyzed for VOCs.

The following is a list of the physical parameters and other measurements that will be conducted for sediment and surface water samples:

- Hardness
- Total Suspended Solids

- Dissolved Oxygen
- Total Organic Carbon
- Grain Size
- Turbidity
- Alkalinity
- pH
- Conductivity
- Temperature

SECTION 11

Background Sampling Plan

11.0 Background Sampling Plan

11.1 Purpose

This section presents the surface water and sediment background sampling plan for the Brown's Dump Site. The background data will be collected from within the City of Jacksonville for use in the RI/FS. The purpose of the background sampling program is to provide sufficient data to establish representative background concentrations for naturally occurring constituents and anthropogenic constituents common to urban environments around the Brown's Dump Site.

11.5 Data Collection Plan

To estimate background conditions at the site, 5 surface water locations and 5 sediment sample locations will be collected in the surrounding area that is considered un-impacted from historical site activities. At the 5 surface water locations, filtered samples and unfiltered samples for total metals will be collected. Tables 11-2 and 11-3 summarize the total number of samples and types of analyses and the associated QA/QC sample analyses.

All background samples will be analyzed for the TAL. In addition, selected samples will be analyzed for the TCL and dioxin/furans.

The sequencing of sediment and surface water samples at each location and between sampling locations will minimize the potential for cross contamination. Sampling will progress from the downstream location to the upstream location, with the background samples being collected last. At each station, the water column samples will be obtained prior to collecting the sediment samples.

11.5.3 Surface Water and Sediment

Surface water bodies near the site will be sampled for sediments and surface water, as shown in Figure 11-1. The specific locations may be adjusted based on accessibility and tidal influence during sampling. Field judgement will be used to locate sediment samples in areas more representative of sediment deposition. Table 11-4 presents a summary of the samples proposed for the site.

Five sample locations will be selected for background to the Brown's Dump site. Three of these sample locations will be located along the Moncrief Creek, upstream of Brown's Dump area. The rational for these locations are to determine upgradient background data. Two additional samples will be located on different smaller drainage ways that discharge into the Moncrief Creek. The rationale for selection is to determine if any contaminants are present in those sources and verify their contribution (if any) to Moncrief Creek.

Samples will be collected away from major roadways to avoid localized contamination from vehicle traffic.

Surface water samples will be collected at the sediment sampling locations at midstream. Although sediment samples remain more constant, surface water samples may exhibit high temporal and seasonal variability. For this reason, sediment characteristics may be more indicative of effects on a surface water body over time.

A total of (5) sediment samples will be analyzed for the TCL (except VOCs) and TAL parameters; 20 percent of collected samples will be analyzed for VOCs and for dioxins and furans. A total of (5) surface water samples will be analyzed for the TCL (except VOCs) and TAL parameters; 20 percent of the collected samples will be analyzed for VOCs. All water samples will be analyzed for hardness, total suspended solids (TSS), dissolved oxygen (DO), turbidity, TOC, and alkalinity. All sediment samples will be analyzed for TOC and grain size, in addition to the TCL/TAL parameters. Stream width, depth, and flow rate estimates will be documented along with pH, conductivity, and temperature at surface water collection locations.

11.5.4 Sample Summary

Tables 11-2 and 11-3 present the estimated number of SWSD samples to be collected during the initial background sampling effort and the parameters to be analyzed.

TABLE 11-2
Background Analytical Program
Brown's Dump Site SWSD Sampling Plan

Media	TCL/TAL	TAL ONLY	Geotechnical [a]	TOC	General [b]
EPA METHOD(s)					
Sediment (5 samples)	5 [c]	0	1	1	0
Surface Water (5 Unfiltered samples)	5 [d]	0	0	1	1
Surface Water (5 Filtered samples)	0	5 [e]	0	0	0
Total	**10**	**5**	**1**	**2**	**1**

TCL/TAL Target Compound List/Target Analyte List; also, dioxins/furans for soil and sediment only.

a. Geotechnical parameters: grain size, moisture content, bulk density, and cation exchange capacity.
b. General parameters: includes hardness, total suspended solids, dissolved oxygen, turbidity, and alkalinity.
c. Dioxins/furans and VOCs analyzed in 1 (20 percent) of sediment samples.
d. Dioxins/furans are not included in the analysis of surface water samples. VOCs analyzed in 1 (20 percent) of the surface water samples.
e. Cyanide will not be analyzed as part of the TAL procedures for the filtered samples.

TABLE 11-3
Background QA/QC Analytical Program
Brown's Dump Site SWSD Sampling Plan

Media	TCL/TAL
EPA METHOD(s)	
Field Duplicates (10% of total analysis)	
Sediment (5 samples)	1
Surface Water (5 Unfiltered samples)	1 [a]
Surface Water (5 Filtered samples)	1 [a]
Matrix Spike/Matrix Spike Duplicates (5% of total analysis)	
Sediment (5 samples)	1
Surface Water (5 samples)	1 [a]
Equipment Rinsates (1 per week per team per media)	
Sediment (5 samples)	1
Surface Water (5 Unfiltered samples)	1 [a]
Surface Water (5 Filtered samples)	1 [a]
Ambient Blanks (One per week from each final rinse water source, assume 1 water source) [b]	
Sediment (5 samples)	0
Surface Water (5 samples)	0
Total	**6**

TCL/TAL Target Compound List (except VOCs) and Target Analyte List and dioxins/furans unless noted otherwise.

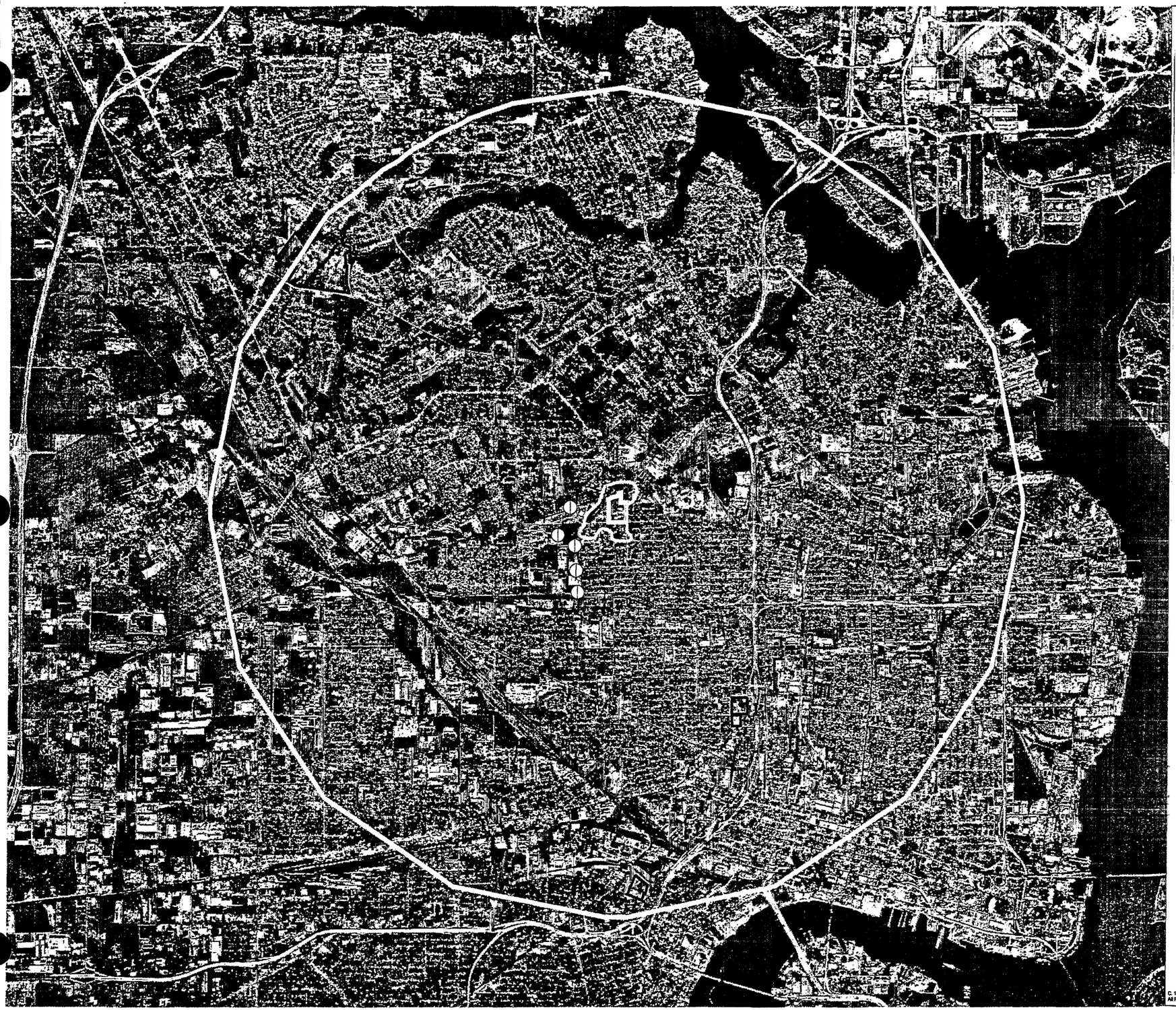
VOC volatile organic chemicals

a. Dioxins/furan analysis not included in surface water samples.
b. Included with other sampling QA/QC.

TABLE 11-4
Background Sampling Locations by Sites
Brown's Dump Site SWSD Sampling Plan

Matrix	# Samples	Location	Comment
Surface Water (Unfiltered)	5	3 samples on Moncrief Creek, 2 samples from feeder creeks along west side of Moncrief Creek	
Surface Water (Filtered)	5	3 samples on Moncrief Creek, 2 samples from feeder creeks along west side of Moncrief Creek	
Sediment	5	3 samples on Moncrief Creek, 2 samples from feeder creeks along west side of Moncrief Creek	
QC			
Field Blanks			Decontamination water sampled once per week
Sediment	0 [a]		
Surface Water	0 [a]		
Total	0		
Trip Blanks			For VOCs only; every shipment to lab
SW/ Sediment	1		
Total	1		
Field Duplicates		**5% of samples**	
Surface Water (Unfiltered)	1	5 samples	
Surface Water (Filtered)	1	5 samples	
Sediment	1	5 samples	
Total	2		
MS/MSD		**5% of samples**	
Surface Water	1	5 samples	
Sediment	1	5 samples	
Total	2		

TCL/TAL Target compound list/Target analyte list
a. Included with other sampling QA/QC.



Extent of Ash CH2MHill, Field Data, 2000
Brown's Dump Site

Other Remediation Sites

Public Land

3 Mile Buffer

Brown's Proposed SW/SD Background Samples

N

4000 0 4000 Feet

Figure 11-1
Background Sampling Plan - Brown's Dump Site
City of Jacksonville Ash Disposal Sites
RI/FS Work Plan Addendum

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SECTION 12

Brown's Dump Site Field Sampling Plan

12.0 Brown's Dump Site Field Sampling Plan

See the Brown's Dump Site Work Plan, Revision No. 2, March 2000, for discussions related to site description, conceptual site model, and preliminary remedial action alternatives.

12.4 Data Collection Plan

12.4.1 General Approach

The purpose of this subsection is to describe the site-specific sampling strategy for SWSD. Standardized procedures are presented in Section 10. The goal is to meet the general DQOs stated in Section 3 of the Work Plans. The site-specific DQO for this site is to evaluate the potential impact the site contaminants had on nearby surface water and sediment.

12.4.2 SWSD Investigation

12.4.2.1 Field Screening

Sediment/Surface Water. The standardized strategy for surface water and sediment sampling will be followed as described in Section 10. Sampling procedures will follow EPA Region IV protocols.

As part of the SWSD investigation, surface water and sediment sampling will be performed at eight locations along Moncrief Creek. The proposed locations are as follows:

- One adjacent to the residential area and ash area west of the school
- One north of the school immediately upstream of the RR bridge
- One approximately 800 feet downstream of the RR bridge (approximate extent of adjacent ash)
- One approximately 1300 feet downstream of the RR bridge (beyond the adjacent ash extent)
- One south of Nash Road, immediately downstream of the area where lead levels greater than 75,000 ppm were detected in the past (north of the JEA substation)
- One at the midpoint of the northern school property boundary
- One at the northwest corner of the school property
- One at the intersection of 33rd Street and Moncrief Creek

Sediment samples will be analyzed for the TCL (except VOCs) and TAL parameters; 20 percent of collected samples will be analyzed for VOCs and screened for dioxins and furans.

Surface water samples will be analyzed for the TCL (except VOCs) and TAL parameters; 20 percent of the collected samples will be analyzed for VOCs. TAL will include filtered and unfiltered samples.

All water samples will be analyzed for hardness, total suspended solids (TSS), dissolved oxygen (DO), turbidity, TOC, and alkalinity. All sediment samples will be analyzed for TOC and grain size, in addition to the TCL/TAL parameters. Stream width, depth, and

flow rate estimates will be documented along with pH, conductivity, and temperature at surface water collection locations.

12.4.4 Sampling Approach

The general sampling approach is described in Section 10 and Section 11.5.3, paragraph 1 of this report. This reference states that the specific locations may be adjusted based on accessibility and tidal influence during sampling. Field judgement will be used to locate sediment samples in areas more representative of sediment deposition. The field sampling procedures are described in Appendix D of the Work Plan. The QAPP is included in Appendix F of the Work Plan.

The sequencing of sediment and surface water samples at each location and between sampling locations will minimize the potential for cross contamination. Sampling will progress from the down stream location to the upstream location, with the background samples being collected last. At each station, the water column samples will be obtained prior to collecting the sediment samples.

12.4.5 Sampling Summary

The number and types of samples proposed for collection at this site are summarized in Table 12-2. Figure 12-2 illustrates the sampling locations. QA/QC samples will be taken at the frequency designated in the QAPP. A summary of estimated QA/QC samples is presented in Table 12-3.

TABLE 12-2
Analytical Program for the Brown's Dump Site
Brown's Dump Site SWSD Sampling Plan

Lab Analysis	TAL %	TAL Samples	TCL %	TCL Samples	Dioxins %	Dioxins Screen	Dioxins Confirm.	VOC	TOC	Grain Size
Sediment		4		4	20%	1	0	1	1	1
Surface Water (Unfiltered)		4		4	0	0	0	1	0	0
Surface Water (Filtered) [a]		4		0	0	0	0	0	0	0

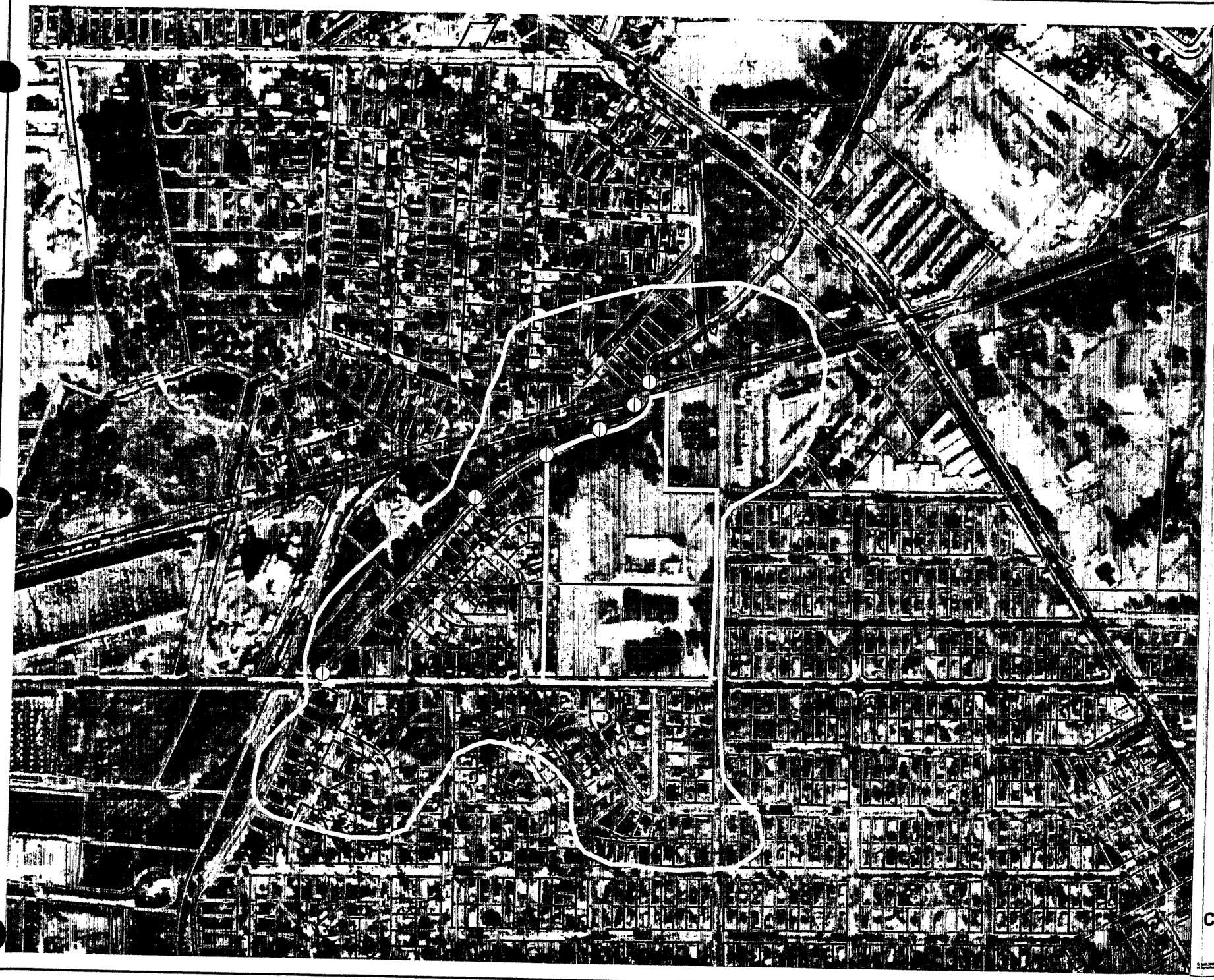
Dioxins dioxins/furans
TAL Target Analyte List
TCL Target Compound List (except VOCs)
TOC total organic carbon
VOC volatile organic chemicals
a. Cyanide will not be analyzed as part of the TAL parameters for the filtered samples

TABLE 12-3
QA/QC Analytical Program for the Brown's Dump Site
Brown's Dump Site SWSD Sampling Plan

Lab Analysis	TCL	TAL	Dioxins	VOC
EPA Method(s)				
Field Duplicates (10% of total analysis)				
Sediment	1	1	1	1
Surface Water (Unfiltered)	1	1	0	1
Surface Water (Filtered)	0	1	0	0
Matrix Spike/Matrix Spike Duplicates (5% of total analysis)				
Sediment	1	1	1	0
Surface Water (Unfiltered)	1	1	0	0
Equipment Rinsates (1 per week per team per media)				
Sediment	1	1	1	1
Surface Water	0	0	0	0
Trip Blanks				
Sediment	1*	0	0	0
Surface Water	0*	0	0	0
Ambient Blanks (One from final rinse each water source, assume 1 water source)				
Sediment	0	0	0	1
Surface Water (Unfiltered)	1	1	1	0
Total	**7**	**6**	**4**	**4**

TCL Target Compound List (except VOCs)
TAL Target Analyte List
Dioxins Dioxins/furans by confirmation

* Only one trip blank per cooler.



Brown's Proposed Sample Points
Surface Water / Sediment Samples

Brown's Dump Site

Extent of Ash CH2MHill, Field Data, 2000

Parcels

N

400 0 400 Feet

Figure 12-2
Brown's Dump Site Sample Plan
City of Jacksonville Ash Disposal Sites
RI/FS Work Plan Addendum
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